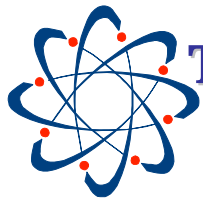


YOUR NEWSLETTER WITH THE LATEST IN RADIATION SAFETY



THE RADCO REGISTER

VOLUME 12, No. 2

APRIL 2002

A CECOM RADIATION SAFETY NEWSLETTER FOR THE US ARMY NATIONAL GUARD



Postal Rate Hike has your *'Stamp of Disapproval'!*

but.....

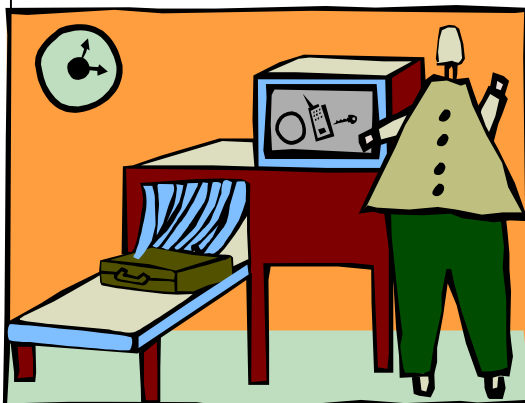
be sure to get the *'Stamp of Approval'*
from your RSO regarding

X-ray Scanners, Cabinets,

and

*Postal Security Screening
Systems ..!*

read about CECOM's
safety guidelines inside....



Your STATE and LOCAL RADIATION
SAFETY OFFICERS (RSO) are: (fill-in)

(NAME)	(PHONE #)
SRSO: _____	_____
ASRSO: _____	_____
LRSO (CSMS): _____	_____
LRSO (USP&FO): _____	_____
LRSO (MATES): _____	_____
LRSO (AASF): _____	_____



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The distribution and content of this newsletter is directed to Army National Guard activities for which the U.S. Army Communications-Electronics Command (CECOM) Directorate for Safety, Radiological Engineering Division, serves as RSSO. The RADCO Register is published quarterly and is intended as a medium for the exchange of radiation safety information between CECOM and the National Guard Bureau. The primary distribution of this newsletter is to Occupational Health/State Safety Offices, U.S. Property & Fiscal Offices, and Combined Support Maintenance Shops, with local reproduction encouraged.



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ON GUARD...



**May the
"FORCE
(PROTECTION)"
be with You...!!**

Recent Force Protection initiatives have resulted in several ARNG states purchasing x-ray cabinets and scanners to screen incoming mail, packages, and equipment. As your friendly RSSO, we would like to remind all of you to notify your State RSO of the impending purchase prior to installing any x-ray



device! You can imagine the problems this has caused, such as, requests for safety training, requests for dosimeters, safety surveys, and the list goes on and on.

For all you SRSOs out there, here are a few helpful suggestions to help prevent the purchase of these types of

devices without your consent or prior knowledge.

You should plan a meeting with any units that are responsible for Force Protection or Anti-Terrorism and let them know that **YOU**, the SRSO, are responsible for the State's Radiation Safety Program (RSP). This program includes the purchase, safe use, training and regulatory issues associated with x-ray machines and x-ray scanners. Make it clear that any radiation safety issues associated with the purchase and installation of these x-ray devices are better dealt with

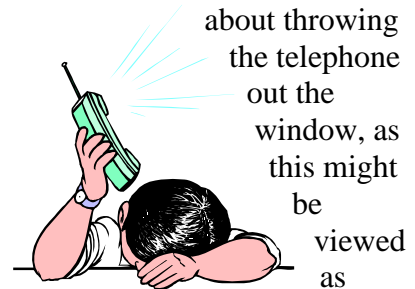
up front rather than after the fact!

Next, contact your procurement personnel and let them know that **YOU**

should be notified before any items designated as "x-ray cabinets," "scanners," "security screening systems," etc., are purchased! **YOU**, as the SRSO, know that purchasing an x-ray machine requires development of a broad safety program, whereas, procurement sees this as a one-time buy! If any

SRSO has some real life experiences in dealing with this situation, please let us know, we'll share this information with other State RSOs.

Now, back to the real world. You get a call from the mailroom and a person says that they have a new cabinet x-ray system that x-rays letters and wants to know if it is safe to operate. At this point, we urge you to forget

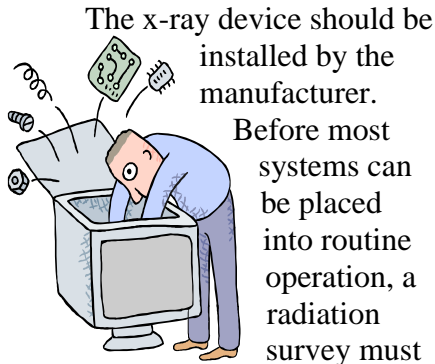


about throwing the telephone out the window, as this might be viewed as counterproductive, and think more about the requirements for an effective RSP (more productive) at this unit.

Let's start with the regulatory issues. An Army Radiation Authorization (ARA) is required for x-ray machines that produce a high or very high radiation area. Practically all of the devices purchased by the ARNG **DO NOT** fit into this category. Next, call your state Bureau of Health or similar entity to see if they require a license registration fee (i.e., for use of the x-ray tube head).

The next order of business is to determine "what kind" of x-ray system you have. The

class of system (i.e., open installation, cabinet x-ray system, etc.) determines the checks that must be done. If in doubt, contact us, we're here to help. Once the determination is made, ensure the device is added to the radiation source inventory.



also be performed by a qualified expert (the manufacturer will most likely perform this service.) Make sure you receive a copy of the survey and maintain it on file.

Develop a Standing Operating Procedure (SOP) for the use of the x-ray device to ensure consistent operation.

Ensure that personnel operating the x-ray machine receive a safety briefing about the equipment before they use the x-ray machine, and recommend annually thereafter. This briefing should cover x-rays, how the x-ray machine works, the SOP, safety precautions, how to use dosimeters, if required, emergencies, and other issues. The safety briefing may be given by the

SRSO, the manufacturer's representative, or other qualified radiation safety personnel. Thanks to the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), we have a copy of a training packet that we can e-mail to you, you just need to ask. Be sure to document and retain your training records on file.

Not all x-ray machines and x-ray scanners require operators to wear dosimeters.



The manufacturer should be able to tell you if they are required, but if in doubt, we'll help you to make the determination.

For the most part, these x-ray devices are built to be self-contained and are not designed to produce harmful levels of radiation if it is operated as intended by the manufacturer. Therefore, it is imperative to be informed of the purchase as early as possible, as this will allow

you ample time to plan and implement the above radiation safety program requirements.

One final word of advice.... if you're requiring that dosimeters be worn while operating the x-ray machine, ensure that the package containing the dosimeters is not "**x-rayed**" upon entering your state. This has unfortunately happened here at Fort Monmouth and although the dosimetry custodian had to complete a lot of **red tape** to straighten out the mix-up, he is expected to make a full recovery. ★



Remarks from the ARNG SOH Conference.. Our Leader Speaks Out !

It sure was enjoyable participating in the recent 30th Annual ARNG Safety and Occupational Health Conference, held 20-21 February at the Professional Education Center (PEC) in North Little Rock, AR. I appreciated the face time I got with the State Radiation Safety Officers to present the status of the RSP and to discuss current issues affecting the states. In case

you were not in attendance at the conference, here's the lowdown on what was discussed. If you are an avid reader of the RADCO Register, these issues will not be new to you.

The most common finding during our inspections in FY01 was overdue leak tests for M43A1s and CAMs. Some discussion at the conference focused on how to resolve these issues.

Obviously, the importance of the leak test in maintaining mission ready equipment must be conveyed to using unit commanders, but also, overdue assets must be brought to the attention of the SRSO and the SMO for immediate resolution. This issue was also discussed with the Chairmen of the Safety and Occupational Health Programs within your state.

With regard to our training courses, some of the OHNs requested that we investigate offering Continuing Education Credits (CEUs) in lieu of/in addition to ACE accreditation. We will look into this and keep you posted.

Perhaps one of the most pressing issues currently impacting your RSPs is the purchasing of Generally Licensed equipment in support of force protection, domestic preparedness,

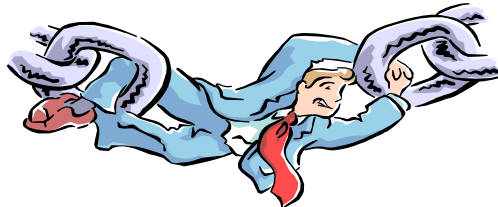
emergency response, and counterdrug operations.



ION MOBILITY SPECTROMETER

These may vary from commercial chemical agent detectors and contraband detectors, or even lead paint analyzers and gas chromatographs used by your DPW folks. Since these items are generally licensed, anyone can purchase and possess them. However, that does not mean that there aren't certain requirements that must be met. These typically include accountability, leak testing, etc.

The biggest problem with these devices is that they are being procured without any coordination with the SRSO. This can lead to problems.

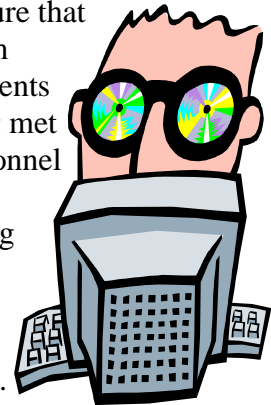


After all, it's the SRSO's responsibility for holding the RSP together.!!

How can you rectify the situation? You need to stress to all organizations within the state that any purchase of an item containing radioactive material must be coordinated with the SRSO.

Alternatively, if there is a central purchasing agency, let them know to call you prior to the purchase of any item that is used for "detecting, analyzing, scanning, etc." (recognize this from our previous article..??)

The above concerns apply also to x-ray units that are being procured for mail screening. Although they are relatively safe, coordination with the SRSO is essential to help ensure that minimum requirements are being met and personnel are not increasing their potential for an exposure.



As soon as you learn that these types of equipment have been or are being purchased, let us know if there is anything we can do to assist you in incorporating them into your overall Radiation Safety Program. ★

Keeping “Tabs” on your “CADS”

Have you glanced at your TMDE Information Maintenance Management System (TIMMS) printout lately? Do



you think you know where all your M43

CADs and CAMs are? With deployment, NTC training and direct shipment to units, these items can fail to be accounted for on the wipe test database maintained by the CSMS.

As you well know, these commodities are required to undergo radiation source leak testing as well as a bottoms-up inventory annually. We'll accept the leak test records as proof of inventory because they are tested on an annual basis. This only works, however, if your DODRATTS (Department of Defense Radiation Testing and Tracking System) is properly administrated as mandated by AR 710-3. That is, the DODRATTS Technician at the DOL maintains a database including all items carried on the property book via the Standard Property Book Software (SPBS) Program. When leak tests are due, the unit is notified, and when the

leak test is completed the CSMS notifies the DOL and the database is brought up to date.

Sorry to say, we have found that due to personnel reductions in some DOL facilities, the DODRATTS Technician position is vacant. When this occurs, it is the Calibration Coordinator's responsibility at the CSMS to track the items by numbers and by location in the state. Typically, the Calibration Coordinator is made aware of the item when it is turned in to the CSMS for leak testing. This results in the leak test database at the CSMS not agreeing with what SPBS is reporting. And what should come as no surprise.....this results in a major finding during a review.

When there is no DODRATTS technician, the Calibration Coordinator and a Supply Analyst in DOL must balance the leak test database with the property book records every so often. This way the Calibration Coordinator will know who has what so that these items are leak tested annually, as required.

Items overdue for leak testing are non-mission capable. And what should come as no second surprise....items not leak tested when due result in a

finding at the RSP review.

What if the unit is deployed? There is only one permissible reason for missing an annual radioactive source leak test. That is when the item is in use in a hostile zone during a declared national emergency

(such as outside a cave somewhere in



the mountains of Afghanistan)

Deployment to any other location does not qualify. Placing the items in secured storage while on deployment does not exempt the items from source leak testing.

So there you have it...!!!!
By keeping “**Tabs**” on your “**CADS**” you'll know where those commodities are and you'll be in a position to get those leak tests finished on a timely basis. ★

Did you “I.D.” your LORAD X-RAY Today..???

Do you have a LORAD X-ray? Are you a LORAD X-Ray RSO or Dosimetry Custodian? Maybe both? Did you know you should enter a number on the Dosimetry Issue Sheet

that designates a person as a LORAD user? ***You didn't ??***

Well, you know the Dosimetry Issue Sheet you receive from the U.S. Army Automated Ionizing Radiation Dosimetry Branch (AIRDB), with the names of all the personnel in your Dosimetry program listed? There is a column labeled "NRC" (Nuclear Regulatory Commission) which tells the good folks at AIRDB which radiation sources are being used by the personnel in your Account Code.

So, for anyone issued a Thermoluminescent Dosimeter (TLD) in support of LORAD use, there should be a specific number listed in the "NRC" column. Take a look at the bottom left side of your listing to see if there is already a number appointed for the LPX-160 LORAD, and make sure that is reflected in the "NRC" column. If there is no number, then designate a unique number to correspond exclusively with LORAD users for your Account Code. (NOTE: You will never use "1" since that will always be N/A.) This allows the potential dose to LORAD users to be differentiated from other radiation workers.

What good is this to *you*? Plenty! Knowing where a dose is accumulated is the

first step in reducing it. It can help show where training is needed and where resources should be directed.

So, the next time you get your Dosimetry Issue Sheet, remember to ensure the "NRC" Column is marked to reflect if your personnel are wearing their TLDs in support of the LORAD X-Ray unit.

And here's a gentle reminder...in case you haven't ever contacted the **AMCOM RSO, Keith Rose**, to give him your Dosimetry Account Code (found at the top of Page 1 of your Dosimetry Issue Sheet), please take a moment to call him at DSN 897-2114, or Comm (256) 313-2114. ★

in the field..... by Lyle Farquhar



"I FIND THE BASIC PROTECTION PRINCIPLES OF 'TIME, DISTANCE & SHIELDING' ALSO WORK FOR THE DAILY 'BATTLE-UP' BRIEFING!"

Direct from the Great Pacific North “Wet” It’s Raining M8A1s and CAMs...!!!

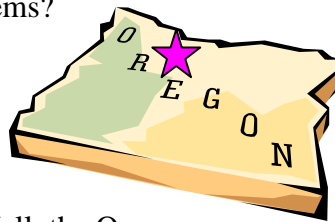
If you have strolled through your USP&FO warehouse lately, you might have seen quite a few Chemical Agent Alarms (M8A1) and Chemical Agent Monitors (CAM). Where the heck are they coming from? Would you believe a state in the Great Pacific Northwest, or North “wet,” as they like to call it.

The Active Army has been fielded the Automatic Chemical Agent Detector Alarm (ACADA) and the Improved Chemical Agent Monitor (ICAM). These items are replacements for the M8A1 and the CAM. ARNG states are being fielded the M8A1s and CAMs that the Active Army has turned in.

If you take a look at a unit’s property book and notice that the **authorized quantity** of these items is more than the **on-hand quantity**, there is a good chance that unit will be fielded the difference between

the two. In fact, the ARNG is scheduled to receive an additional 6,000 M8A1s and 4,000 CAMs. This more than doubles the current inventory of the states to date.

So, what organization in the Guard has the responsibility to field these items?



Well, the Oregon CSMS/RSMS in Clackamas has been tasked with the mission to refurbish these items to 10/20 standards and field them within the ARNG. As you can imagine, this is the greatest undertaking for Oregon since the Lewis and Clark Expedition, and it will take some time for all the states to receive their allotment of items.

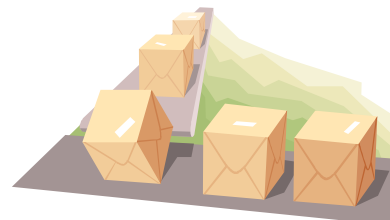
Once your allotment is received at the warehouse there are a couple of steps that must be completed to ensure compliance with the Soldier Biological and Chemical Command’s (SBCCOM) NRC license. The first step at the warehouse is to ensure these items are placed in a radioactive material storage area while waiting to be fielded. The next step is to ensure all items are placed on the appropriate property book and on the Radiation Testing

and Tracking System (RATTS). The Serialization Officer at the United States Property and Fiscal Office is the person responsible for entering this information into the RATTS system. (See the related article on page 10).

After you have performed the above, ensure the CSMS is given a list of these items along with the enclosed leak test results so they can enter the appropriate information into the TMDE Information Maintenance Management System (TIMMS).

As part of the refurbish process the Oregon ARNG will be performing a leak test on each item before it is shipped. A copy of this leak test will be included in the package. As long as you keep a copy of this leak test record, the next time a leak test has to be performed is one year from this leak test date.

Having this leak test performed by the Oregon ARNG is quite a relief considering some states will be receiving over a hundred of these items per shipment.



Remember...
when these items are

transferred from one unit to another and a leak test has not been completed within the last nine months (you guessed it) one has to be performed immediately!

Sure, there are a good deal of requirements that are associated with these items, but if you can start off on the right foot and get all your reporting taken care of, you will be well on your way to maintaining compliance. ★



This week's question was sent in from SGT Bigg Cheese in Rug Ratts, Wisconsin.

Question: *How does the Radiation Testing and Tracking System (RATTS) track leak test data for the Chemical Agent Detectors and Alarms?*

Answer: To answer this question, we first need to become familiar with the terms **owning unit**; **testing unit**; **reporting unit**; and **radiological laboratory**.

The **owning unit** is sorta' self-explanatory (they're the folks that use the equipment). The **reporting unit** is the serialization officer, usually located at the USP&FO. The **testing unit**, generally personnel from the CSMS, performs the annual leak test of the Chemical Agent Monitor (CAM) or Chemical Agent Detector (CAD). The



radiological laboratory analyzes the leak test sample and reports the results to LOGSA and the testing unit.

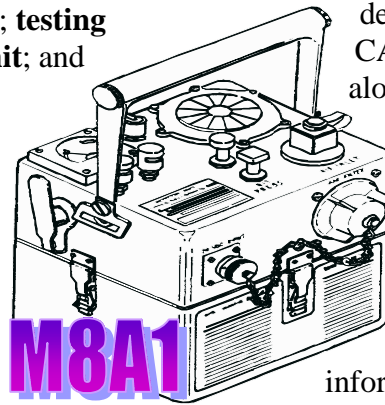
Now that we are familiar with who's doin' what.... let's take a look at how the system is supposed to work. When a CAM or CAD is due for leak testing, the reporting unit (USP&FO) should provide 3 copies of a transaction work card to the owning unit. The

owning unit then fills in the required information on the transaction work cards and delivers the CAM or CAD, along with the 3 cards, to the CSMS. The CSMS performs the leak test, fills in the required information on the transaction work cards, and returns the CAM/CAD to the unit. The CSMS gives one copy of the transaction work card to the owning unit, one copy to the reporting unit and sends the 3rd copy, along with the leak test sample, to the radiological laboratory (that's us). The radiological

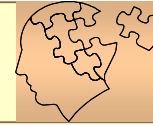
lab analyzes the sample and reports the results to LOGSA and the testing unit (CSMS). More details on the RATTS system can

be found in AR 710-3, Sec. IV. So there you have it....!!

This is "**the answer man**" heading out to the spring home opener ...I'll be looking forward to answering more "hard hitting" questions in the next RADCO. ★



PUZZLES & BRAIN-TEASERS



QUICKIE QUIZ:

1. The new MARKS file number for Radiation Safety Surveys is:

- a. 11-9j
- b. 11-9b
- c. 11-9d
- d. 385-11b

2. Situation: You have performed a contamination survey of your radioactive material storage area. Statement: There is no need to document the specific location where wipes were taken by drawing a sketch of the storage area. Question: The statement is:

TRUE or FALSE

3. A technical bulletin (TB) that is very useful in the identification of non-ionizing radiation producing devices such as the AN/GSC-52 is:

- a. TB 43-0133
- b. TB 43-0116
- c. TB 43-0137
- d. TB 43-0255

4. PM Magazine advises you to purge your M43A1 detector for one hour every month. For safety reasons, you should perform purging operations:

- a. Indoors
- b. Outdoors

5. Who holds the NRC license for tritium fire control devices:

- a. CECOM
- b. SBCCOM
- c. TACOM-RI
- d. AMCOM

WORD SEARCH for RSOs



F	Q	K	H	X	D	I	G	S	L	I	I
J	D	M	C	N	N	B	S	E	Y	N	J
B	P	T	O	L	U	T	C	V	B	I	C
J	V	C	C	K	O	I	C	O	S	T	J
R	U	I	D	R	R	S	D	L	U	I	N
N	O	J	A	T	G	C	E	G	T	A	B
V	X	G	E	L	K	E	A	O	W	L	N
X	E	M	H	O	C	R	B	I	U	N	E
H	Y	S	K	W	A	S	T	E	D	T	L
L	Q	G	Y	S	B	R	C	B	X	A	R
N	V	S	T	L	U	S	E	R	S	G	R
P	O	S	T	I	N	G	S	A	Z	S	F

BACKGROUND
CLOSEOUT
INITIAL
METRICEL
POSTINGS
RADIAC
STORAGE
VIAL
GLOVES
NUCON
RESULTS
WASTE

... the answers are on the last page!!

NONIONIZING CORNER



Technical Challenge or Technical K.O. ??

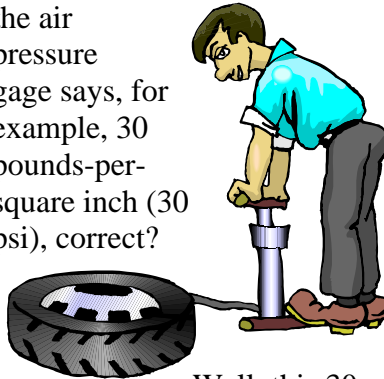
O.K. How many of you tried our “Technical Challenge” from the last edition? We’re sure at least a few of you may have gone a few rounds with the question, some may have gotten knocked-out and even some of you, simply stated, were rendered with a “no decision.” But if you weren’t able to go the distance...don’t throw in the towel just yet....we’ll review the basics behind the challenge and work our way through the logic behind it together.

What we are trying to do here is to get an idea of just how dangerous a cracked or open section of waveguide could be. ...So lace up your boxing shoes and start dancing!

First, we’ll need to understand the concept of radiofrequency radiation (RFR) power density. From here on, we’ll simply refer to this as power density (P_d).

Power density expresses the amount of RF power that covers or flows through a certain area (part of your arm, your head, your whole body, a glass window, etc.). The units for RFR power density (that we’ll use for the purpose of this thread) will be watts-per-square meter. Later, we’ll change the units slightly (and we’ll show you how to do this) to make them more in line with the units found in DoDI 6055.11, Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers. This document can be found at: <http://www.dtic.mil/whs/directives/corres/ins1.html>.

Ok, let’s back-up for a moment. When you put air in your car’s tire, you fill it until the air pressure gage says, for example, 30 pounds-per-square inch (30 psi), correct?



Well, this 30-psi is **pressure-per-unit area** just like the power density is in terms of watts-per-square meter. Still a bit fuzzy? O.K. Let’s work through a fairly simple example. The one we like to use involves a five (5) pound bag of sugar.

If we were to place a 5 pound bag of sugar on a table the 5 pounds would be distributed over the bottom surface of the bag onto the table. Let’s say the bottom surface was rectangular and it measured 4 inches by about 5 inches for a total of 20 square inches of surface area (4 inches x 5 inches = 20 square inches or 20 in.²). Now getting back to the force-per-unit area concept, we’d say that the 5 pound bag of sugar is distributing its weight (or force) over an area equal to 20 square inches. Said in a different way, it presents a force-per-unit area of 0.25 psi (pounds-per-square inch).

$$\frac{5 \text{ pounds}}{20 \text{ in.}^2} = \frac{0.25 \text{ pounds}}{\text{in.}^2} = 0.25 \text{ psi}$$

Now, let’s place that same 5 pound bag of sugar on a very light piece of wood that has a ¼ inch diameter, random length, wooden dowel protruding out the bottom. We now attempt to balance that bag atop the light wood platform with the wooden dowel. The dowel, in effect, focuses, magnifies or multiplies the force-per-unit area caused by the weight of the bag onto a smaller area. Since the end of the dowel is circular, we could calculate the cross-sectional area over which the 5 pound force of the sugar is being focused.

The area of a circular spot can be calculated using the following formula:

$$\text{Area of a circle (A)} = \pi r^2$$

where

$$\pi \approx 3.14159$$

and

r = the radius of a circle

If the circular end of our dowel measures $\frac{1}{4}$ inch in diameter, its *radius* must be half that, or $\frac{1}{8}$ th inch. It turns out that $\frac{1}{8}$ th of an inch, when expressed as a decimal number, is 0.125 inches. So, we have a circular area whose radius measures 0.125 inches. The circular area of that wooden dowel would then be calculated as follows using the Area of a circle formula presented above:

$$A \approx (3.14159) \times (0.125)^2 = 0.04909 \text{ in.}^2$$

Now, let's use this new area to focus our weight (or force) onto. The force exerted by the 5 pound bag of sugar is now being *focused* onto an area measuring 0.04909 inches².



This situation will present a much larger *force-per-unit area* than did the bag by itself on the table. In fact, the new force-per-unit area will be:

$$\frac{5 \text{ pounds}}{0.04909 \text{ in.}^2} \approx \frac{101.859 \text{ pounds}}{\text{in.}^2} = 101.859 \text{ psi.}$$

WOW!!! Comparing this figure to the one where we just rested the bag of sugar on the table we learn that the effect of using the wooden dowel *concentrates* or *focuses* the same force (or weight) onto or over a *much* smaller area. This effectively *multiplies the force* exerted by the same 5 pound bag of sugar by more than 407 times!!!

$$\frac{101.859 \text{ psi}}{0.25 \text{ psi}} \approx 407$$

DING! DING! DING!

Saved by the bell...!!!

Return to your corner, have a seat, and take a nice cool sip....of your favorite beverage.

In the next round we'll continue with more of this technical challenge.

BTW: Ever wonder how a single edged razor blade cuts? What does the word "*sharp*" mean anyway? Think about it. What you've just read should answer this question.



QUICKIE QUIZ SOLUTIONS:

1. The new MARKS file number for Radiation Safety Surveys is:

- a. 11-9j
- b. 11-9b
- c. 11-9d
- d. 385-11b

2. Situation: You have performed a contamination survey of your radioactive material storage area. Statement: There is no need to document the specific location where wipes were taken by drawing a sketch of the storage area. Question: The statement is:

TRUE or FALSE

3. A technical bulletin (TB) that is very useful in the identification of non-ionizing radiation producing devices such as the AN/GSC-52 is:

- a. TB 43-0133
- b. TB 43-0116
- c. TB 43-0137
- d. TB 43-0255

4. PM Magazine advises you to purge your M43A1 detector for one hour every month. For safety reasons, you should perform purging operations:



- a. Indoors
- b. Outdoors

WORD SEARCH

for RSOs

5. Who holds the NRC
license for tritium fire control
devices:

SOLUTIONS:

- a. CECOM
- b. SBCCOM
- c. TACOM-RI
- d. AMCOM

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B T + R + L N + E + M L
A + U + A U A G + E + A
C + + O B D A I T + + I
K + + O E R I R V + + T
G + N + O S I A + + + I
R + + T + C O + C + + N
O G S R E S U L T S + I
U L + L + + + + C + + +
N O + S G N I T S O P +
D V E T S A W + + + + +
+ E + + + + + + + + +
+ S + + + + + + + + +

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RADCO REGISTER Change of Address Form

The RADCO Register is published by the CECOM DS to support the NGB State Radiation Safety Programs. Help us ensure you don't miss a single issue. Should you need to change or update your present address, please fill out this form and mail it to:

USACECOM, Directorate for Safety (DS), ATTN: AMSEL-SF-RE (ZIOLA), Building 2539, Fort Monmouth, NJ 07703-5024. (please make sure your current label is attached)

Name: _____

Organization/Facility: _____

Address: _____

City: _____ State: _____ Zip: _____